Arch Chemicals, Inc.

MATERIAL SAFETY DATA

FOR ANY EMERGENCY, CALL 24 HOURS/7 DAYS:	**1-800-654-6911**
FOR ALL TRANSPORTATION ACCIDENTS, CALL CHEMTREC®:	1-800-424-9300
FOR ALL MSDS QUESTIONS & REQUESTS, CALL MSDS CONTROL:	1-800-511-MSDS

PRODUCT NAME: HTH® SPA SHOCK

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

REVISION DATE: 12-19-2001 SUPERCEDES: 11-08-1999
MSDS NO: 00005-0136 - 86102

MANUFACTURER: **Arch Chemicals, Inc. 501 Merritt 7 PO Box 5204 Norwalk, CT 06856-5204**

SYNONYMS: Sodium dichlor; Sodium dichloroisocyanurate, dihydrate; Sodium dichloro-s-triazinetrione dihydrate
CHEMICAL FAMILY: Chloroisocyanurate
FORMULA: $NaCl_2(NCO)_3\ 2H_2O$
DESCRIPTION: Swimming pool sanitizer
OSHA HAZARD CLASSIFICATION: Oxidizer, corrosive, skin and eye hazard, lung toxin

SECTION 2 COMPONENT DATA

PRODUCT COMPOSITION
CAS or CHEMICAL NAME: Sodium dichloroisocyanurate, dihydrate
CAS NUMBER: 51580-86-0
PERCENTAGE RANGE: 99-100%
HAZARDOUS PER 29 CFR 1910.1200: Yes
EXPOSURE STANDARDS: 0.5 mg/cubic-meter - Manufacturer recommended interim internal exposure standard

CAS or CHEMICAL NAME: Sodium chloride
CAS NUMBER: 7647-14-5
PERCENTAGE RANGE: 0-1%
HAZARDOUS PER 29 CFR 1910.1200: No
EXPOSURE STANDARDS: None Established

SECTION 3 PRECAUTIONS FOR SAFE HANDLING AND STORAGE

DO NOT TAKE INTERNALLY. AVOID CONTACT WITH SKIN, EYES, AND CLOTHING. UPON CONTACT WITH SKIN OR EYES, WASH OFF WITH WATER. AVOID BREATHING DUST.
STORAGE CONDITIONS: Store in a cool, dry, well ventilated area.
DO NOT STORE AT TEMPERATURES ABOVE: 60 Deg.C (140 Deg.F)
PRODUCT STABILITY AND COMPATIBILITY
SHELF LIFE LIMITATIONS: Indefinite if stored at room temperature.
INCOMPATIBLE MATERIALS FOR PACKAGING: Paper, cardboard
INCOMPATIBLE MATERIALS FOR STORAGE OR TRANSPORT: Other oxidizers, organic materials, reducing agents, acids, bases

SECTION 4 PHYSICAL DATA

APPEARANCE: White granular powder with mild chlorine-like odor
BOILING POINT: Not Applicable
DECOMPOSITION TEMPERATURE: Begins to lose 1 mole water at approximately 50 Deg.C (122 Deg.F); second mole water at 95 Deg.C (194 Deg.F); decomposes at 240-250 Deg.C (464-482 Deg.F)
SPECIFIC GRAVITY: 0.96 at 20 Deg.C
BULK DENSITY: 0.9-0.95
pH @ (1 % SOLN.): 6.0-6.5
VAPOR PRESSURE @ 25 DEG.C: Not Applicable
SOLUBILITY IN WATER: 29% at 30 Deg.C
VOLATILES, PERCENT BY VOLUME: Not Applicable
EVAPORATION RATE: Not Applicable
VAPOR DENSITY: Not Applicable
MOLECULAR WEIGHT: 256
ODOR: None to mild chlorine-like
COEFFICIENT OF OIL/WATER DISTRIBUTION: Not Applicable

SECTION 5 PERSONAL PROTECTIVE EQUIPMENT REQUIREMENTS

PERSONAL PROTECTION FOR ROUTINE USE OF PRODUCT:

RESPIRATORY PROTECTION: Wear a NIOSH approved respirator equipped with chlorine cartridges and a dust/mist type prefilter if dusts are created.

VENTILATION: Use local exhaust ventilation to minimize dust and chlorine levels where industrial use occurs. Otherwise, ensure good general ventilation.

SKIN AND EYE PROTECTIVE EQUIPMENT: Wear gloves and chemical safety glasses to avoid skin and eye contact. Where industrial use occurs chemical goggles or full impermeable suit may be required.

OTHER: Eye wash station and safety shower should be provided in the area where product is handled during industrial use.

EQUIPMENT SPECIFICATIONS:
RESPIRATOR TYPE: NIOSH approved full facepiece respiratory equipped with chlorine cartridges and dust/mist type prefilter.
PROTECTIVE CLOTHING TYPE (This includes: gloves, boots, apron, protective suit): Neoprene

SECTION 6 FIRE AND EXPLOSION HAZARD INFORMATION

FLAMMABILITY DATA:
FLAMMABLE: No
COMBUSTIBLE: No
PYROPHORIC: No
FLASH POINT: Not Applicable
AUTOIGNITION TEMPERATURE: Not Applicable
FLAMMABLE LIMITS AT NORMAL ATMOSPHERIC TEMPERATURE AND PRESSURE (PERCENT VOLUME IN AIR): UEL - Not Applicable LEL - Not Applicable

NFPA RATINGS:
Health: 2
Flammability: 0
Reactivity: 1
Special Hazard Warning: OXIDIZER

HMIS RATINGS:

Health:	3
Flammability:	0
Reactivity:	1

EXTINGUISHING MEDIA: Not Applicable

FIRE FIGHTING TECHNIQUES AND COMMENTS: Use water to cool containers exposed to fire. On small fires, use water spray or fog. On large fires, use heavy deluge or fog streams. Flooding amounts of water may be required before extinguishment can be accomplished. Do not use dry chemical extinguisher containing ammonium compounds.

SECTION 7 REACTIVITY INFORMATION

CONDITIONS UNDER WHICH THIS PRODUCT MAY BE UNSTABLE:
TEMPERATURES ABOVE: Begins to lose one mole of water at approximately 50 Deg.C (122 Deg.F). Decomposes at 240-250 Deg.C (464-482 Deg.F).
MECHANICAL SHOCK OR IMPACT: No
ELECTRICAL (STATIC) DISCHARGE: No
HAZARDOUS POLYMERIZATION: Will Not Occur
INCOMPATIBLE MATERIALS: Other oxidizers, nitrogen containing compounds, dry fire extinguishers containing mono-ammonium phosphates
HAZARDOUS DECOMPOSITION PRODUCTS: Nitrogen trichloride, chlorine, carbon monoxide

SUMMARY OF REACTIVITY:

OXIDIZER:	Yes
PYROPHORIC:	No
ORGANIC PEROXIDE:	No
WATER REACTIVE:	No

SECTION 8 FIRST AID

EYES: Immediately flush with large amounts of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Call a physician at once.

SKIN: Immediately flush with water for at least 15 minutes. Call a physician. If clothing comes in contact with the product, the clothing should be removed immediately and should be laundered before re-use.

INGESTION: Immediately drink large quantities of water. DO NOT induce vomiting. Call a physician at once. DO NOT give anything by mouth if the person is unconscious or if having convulsions.

INHALATION: If person experiences nausea, headache or dizziness, person should stop work immediately and move to fresh air until these symptoms disappear. If breathing is difficult, administer oxygen, keep the person warm and at rest. Call a physician. In the event that an individual inhales enough vapor to lose consciousness, person should be moved to fresh air at once and a physician should be called immediately. If breathing has stopped, artificial respiration should be given immediately. In all cases, ensure adequate ventilation and provide respiratory protection before the person returns to work.

SECTION 9 TOXICOLOGY AND HEALTH INFORMATION

ROUTES OF ABSORPTION
Inhalation, skin and eye contact, ingestion

WARNING STATEMENTS AND WARNING PROPERTIES

MAY BE HARMFUL IF SWALLOWED OR INHALED. CAUSES SKIN, EYE, DIGESTIVE TRACT AND RESPIRATORY TRACT BURNS.

HUMAN THRESHOLD RESPONSE DATA

ODOR THRESHOLD: No Data

IRRITATION THRESHOLD: No Data

IMMEDIATELY DANGEROUS TO LIFE OR HEALTH: No IDLH concentration has been established for this product. Sodium dichloroisocyanurate has the potential to be immediately dangerous to life and health.

SIGNS, SYMPTOMS, AND EFFECTS OF EXPOSURE

INHALATION

ACUTE:

Inhalation of this material is irritating to the nose, mouth, throat and lungs. It may also cause burns to the respiratory tract with the production of lung edema which can result in shortness of breath, wheezing, choking, chest pain, and impairment of lung function. Inhalation of high concentrations can result in permanent lung damage.

CHRONIC:

Chronic (repeated) inhalation exposure may cause impairment of lung function and permanent lung damage.

SKIN

ACUTE:

Dermal exposure can cause severe irritation and/or burns characterized by redness, swelling and scab formation. Prolonged skin exposure may cause permanent damage.

CHRONIC:

Repeated skin exposure may cause tissue destruction due to the corrosive nature of the product.

EYE

Severe irritation and/or burns can occur following eye exposure. Contact may cause impairment of vision and corneal damage.

INGESTION

ACUTE:

Irritation and/or burns can occur to the gastrointestinal tract, including the stomach and intestines, characterized by nausea, vomiting, diarrhea, abdominal pain, bleeding and/or tissue ulceration. Ingestion causes severe damage to the gastrointestinal tract with the potential to cause perforation.

CHRONIC:

There are no known or reported effects from chronic exposure. Chronic ingestion of significant amounts of this product is unlikely because of its acute corrosive action.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

Asthma, respiratory and cardiovascular disease

INTERACTIONS WITH OTHER CHEMICALS WHICH ENHANCE TOXICITY

None known or reported

ANIMAL TOXICOLOGY

ACUTE TOXICITY

INHALATION LC 50: > 50 mg/l (1 hr., rat - nominal concentration)

ORAL LD 50: 735 mg/kg. (rat)

DERMAL LD 50: > 2 g/kg. (rabbit)

IRRITATION: Causes burns to eyes and skin.

ACUTE TARGET ORGAN TOXICITY:
This product is corrosive to all tissues contacted and upon inhalation, may cause irritation to mucous membranes and respiratory tract.

CHRONIC TARGET ORGAN TOXICITY
There are no known or reported effects from repeated exposure. Toxicological investigation indicates it does not produce significant effects from chronic exposure except lung damage from inhalation exposure.

Sodium dichloroisocyanuric acid, dihydrate has been tested in laboratory animals and was found not to cause allergic skin sensitization.

REPRODUCTIVE AND DEVELOPMENTAL TOXICITY
Sodium dichloroisocyanuric acid when given orally to pregnant mice from day 6 to day 15 of gestation, did not induce any significant teratogenic effects.

CARCINOGENICITY
This product is not known or reported to be carcinogenic by any reference source including IARC, OSHA, NTP, or EPA.

MUTAGENICITY
Sodium dichlorisocyanuric acid was determined to be non-mutagenic in the Ames assay utilizing five Salmonella strains both with and without metabolic activation.

TOXICITY TO WILDLIFE:
Rainbow trout,96 hr. LC50: 0.22 mg/l
Bluegill sunfish, 96 hr. LC50: 0.28 mg/l
Daphnia magna, 48 hr. LC50: 0.196 mg/l

Mallard duck,8-day dietary LC50: > 10,000 ppm
Mallard duck, Oral LD 50: 3.3 g/kg.
Bobwhite quail, 8-day dietary LC50: > 10,000 ppm
Bobwhite quail, Oral LD50: 730 mg/kg.

SECTION 10 TRANSPORTATION INFORMATION

THIS MATERIAL IS NOT REGULATED AS A DOT HAZARDOUS MATERIAL.

SECTION 11 SPILL AND LEAKAGE PROCEDURES

FOR ALL TRANSPORTATION ACCIDENTS, CALL CHEMTREC AT 800-424-9300.

REPORTABLE QUANTITY (POUNDS): Not Applicable (Per 40 CFR 302.4)

SPILL MITIGATION PROCEDURES: Hazardous concentrations in air may be found in local spill area and immediately downwind. If spill material is still dry, do not put water directly on this product as a gas evolution may occur. If material is wet, contact the network for proper stabilization procedures.

Air Release - Vapors may be suppressed by the use of a water fog.

Water Release - This material is heavier than water. This material is soluble in water. Stop flow of material into water source as soon as possible. Begin monitoring for available chlorine and pH immediately.

Land Spill - Do not contaminate spill material with any organic materials, ammonia, ammonium salts or urea. Clean up all spill material with clean, dry dedicated equipment and place in a clean, dry container.

SPILL RESIDUES: Dispose of per guidelines under Section XII, WASTE DISPOSAL. This material may be neutralized for disposal; you are requested to contact at 800-6546- 911 before beginning any such operation.

PERSONAL PROTECTION FOR EMERGENCY SPILL AND FIRE-FIGHTING SITUATIONS: Response to this material requires the use of a full encapsulated suit and a NIOSH approved positive pressure supplied air respirator.

Compatible materials for response to this material are Neoprene.

Protection concerns must also address the following: If this material becomes damp/wet or contaminated in a container the formation of nitrogen trichloride gas may occur and an explosive condition may exist.

SECTION 12 WASTE DISPOSAL

If this product becomes a waste, it DOES NOT meet the criteria of a hazardous waste as defined under 40 CFR 261, in that it does not exhibit the characteristics of hazardous waste of Subpart C, nor is it listed as a hazardous waste under Subpart D.

As a nonhazardous solid waste it should be disposed of in accordance with local, state, and federal regulations by treatment in a wastewater treatment system.

CARE MUST BE TAKEN TO PREVENT ENVIRONMENTAL CONTAMINATION FROM THE USE OF THIS MATERIAL. THE USER OF THIS MATERIAL HAS THE RESPONSIBILITY TO DISPOSE OF UNUSED MATERIAL, RESIDUES AND CONTAINERS IN COMPLIANCE WITH ALL RELEVANT LOCAL, STATE AND FEDERAL LAWS AND REGULATIONS REGARDING TREATMENT, STORAGE AND DISPOSAL FOR HAZARDOUS AND NONHAZARDOUS WASTES.

SECTION 13 ADDITIONAL REGULATORY STATUS INFORMATION

TOXIC SUBSTANCES CONTROL ACT:
This substance is listed on the Toxic Substances Control Act Inventory.

SUPERFUND AMENDMENT AND REAUTHORIZATION ACT TITLE 3:
HAZARD CATEGORIES, PER 49 CFR 370.2:
HEALTH:
Immediate (Acute)
PHYSICAL:
Fire

EMERGENCY PLANNING AND COMMUNITY RIGHT TO KNOW, PER 40 CFR 355, APP. A:
EXTREMELY HAZARDOUS SUBSTANCES - THRESHOLD PLANNING QUANTITY:
None Established
SUPPLIER NOTIFICATION REQUIREMENTS, PER 40 CFR 372.45:
None Established

SECTION 14 ADDITIONAL INFORMATION

MSDS REVISION STATUS: Revision to Sections 2, 3, 5, 9, and 11

SECTION 15 MAJOR REFERENCES

1. Rabbit Eye Irritation Study, sodium dichloroisocyanurate. Food and Drug Research Laboratories, Industrial Biology Division, Conshohocken, PA, I.B.L. No. 10113-F, September 22, 1971.
2. Acute Toxicity Studies with Sodium Dichloroisocyanuric Acid, Industrial BIO-TEST Laboratories, Inc., Northbrook, IL, P.O. No. RC-34355, IBT No. 8530-08303, April 20, 1976.
3. Inhalation LC 50 (rat), sodium dichloroisocyanurate (sodium-dichloro-S-trione), Final Report, Consumer Product Testing, Fair field, NJ, Study No. 78272-2, Reference No. P.O. RC-42380, April 9, 1979.
4. Eight-Day Dietary LC 50 - Mallard Duck, ACL 60, Final Report, Truslow Farms Inc., Wildlife Research Division, Sterling, VA, Pro ject No. 139-109, July 15, 1975.
5. Acute Oral Toxicity Study with Sodium Dichloroisocyanurate in Mallard Ducks, Industrial BIO-TEST Laboratories, Inc., Northbrook, IL, IBT No. J1766, September 14, 1972.
6. Eight-Day Dietary LC 50 - Bobwhite Quail, ACL 60, Final Report, Truslow Farms Inc., Wildlife Research Division, Sterling, VA, Project No. 139-108, July 15, 1975.
7. Acute Oral Toxicity Study with Sodium Dichloroisocyanurate in Bobwhite Quail, Industrial BIO-TEST Laboratories, Inc., Northbrook, IL, Service Order No. RC-1310, IBT No. J1765, September 21, 1972.
8. Acute Toxicity of Sodium Hypochlorite, Sodium Dichloro-s-Triazinetrione Dihydrate and s-Triazinetrione to the Water Flea (Daphna magna) by D. G. MacKellar and M. L. Weiner, FMC, Industrial Chemical Division, Princeton, NJ, ICG/T-78-076, August 14, 1978.
9. Acute toxicity of Sodium Dichloroisocyanurate to bluegill (Lepomis macrochirus) and rainbow trout (Salmo gairdneri), Bioassay Report, Bionomics, Inc., Wareham, MA, August, 1972.
10. A Review of Toxicology Studies on Cyanurate and its Chlorinated Derivatives by B. G. Hammond, et al., Environmental Health Perspectives, Vol. 69, pp. 287-292, 1986.
11. 28-Day Dosing Study in Rats (Extended to a 59-Day Dosing Study, s-Triazinetriol, Monosodium Salt; Sodium Dichloro-s-triazinetrione dihydrate and Trichloro-s-triazinetrione, International Research and Development Corporation, Mattawan, MI, Study No. 167-150, September 12, 1980.
12. A Four Week Inhalation Toxicity Study of Sodium Dichloroiso-cyanurate Dihydrate in the Rat, submitted to FMC, Project No. 78-7154, August 31, 1979.
13. Zeiger, E., et al., 1987. Salmonella Mutagenicity Tests: 3. Results from the Testing of 255 Chemicals. Environmental Mutagenesis. Journal of the Environmental Mutagen Society, Volume 9, Supplement 9:1-110. Alan R. Liss, Inc. NY.
14. Sodium dichloroisocyanuric acid, dihydrate (CDB Clearon), Guinea Pig Sensitization Report. MB Research Laboratories, Inc., Spinnerstown, PA. MB Project # MB89-9566F, October 16, 1989.

Additional references are available upon request.

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